

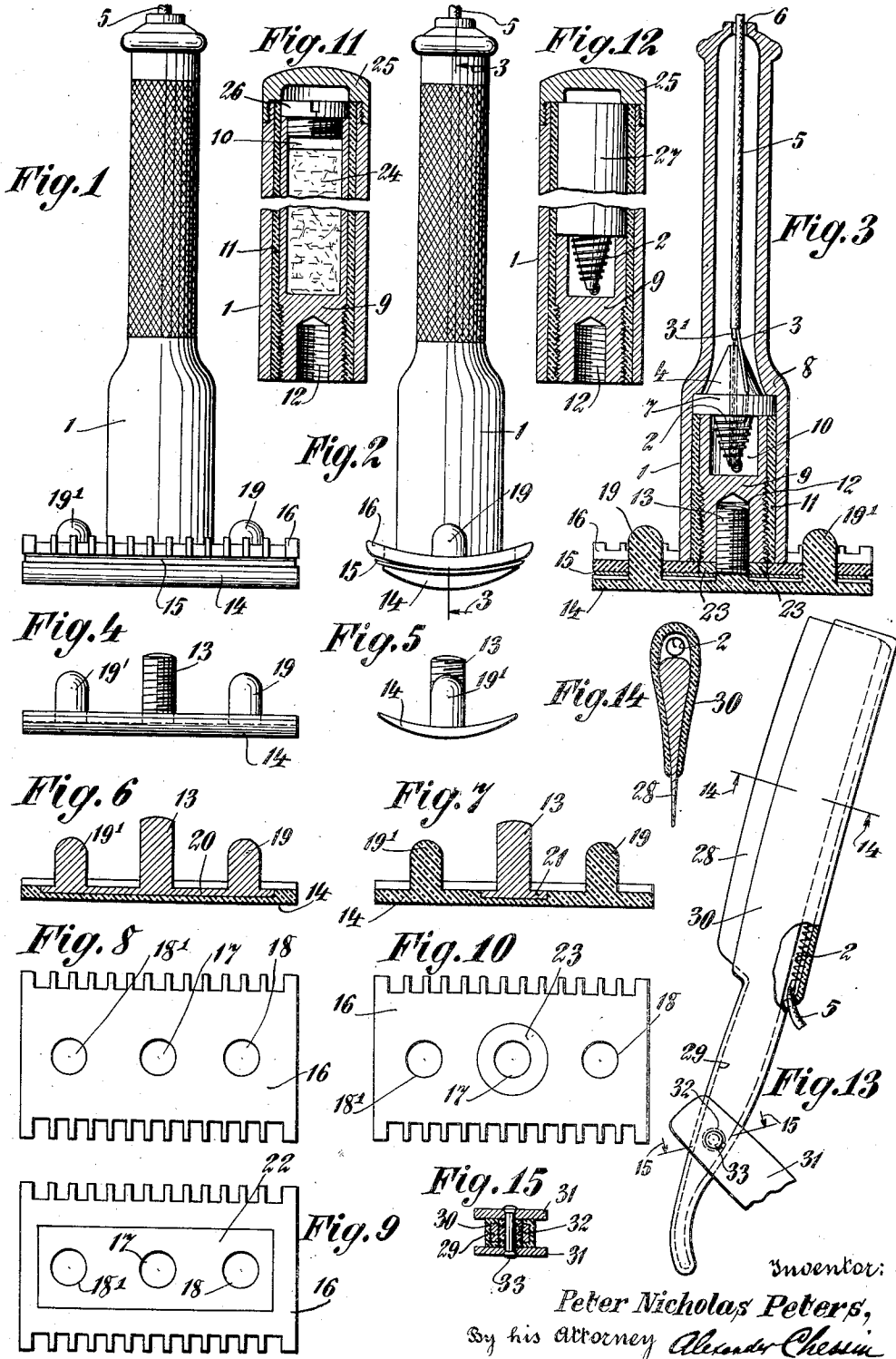
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RAZOR

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# UNITED STATES PATENT OFFICE

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## RAZOR

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My invention relates to razors provided with means for heating the blade during the process of shaving.

It is generally known that in shaving the use of hot water is preferable to the use of cold water, and various attempts have been made to supply heat directly to the blade. Such attempts appear to have been confined to temperatures slightly above that of the human body. Undoubtedly, even a moderately heated blade is preferable to one that is not heated at all, but I have discovered that no substantial improvement is obtained unless the blade is heated to a temperature so high as to render razors, such as are in use to-day, unsuitable for the purpose because of the inevitable spreading of the high temperature to other parts of the razor which come in contact with the skin, as, for instance, the supporting members of standard safety razors, with the danger of burning and seriously injuring the skin operated upon. My discovery thus led me to devise a razor, whether of the ordinary or of the safety type, in which the blade can be heated to the necessary high temperature without injuring or burning the skin. I accomplish this by heat insulating all parts of the razor which are adapted to come in contact with the skin except the cutting edge or edges of the blade. The cutting edge, even though its temperature be that of boiling water or higher, working as it does through a coat of lather, does not burn or injure the skin, especially if the blade is moved in rapid strokes, as it is customary to do in shaving. In this way, the heat is applied at the proper place, i. e. at the base of the hair filament, and nowhere else, and the danger of burning or injuring the skin is eliminated. Besides, with a razor embodying my invention, it is not necessary to go over the surface of the skin more than once to effect a perfect shave. I have also found that no soothing lotions are needed after shaving with such a razor, the heat treatment, apparently, having the same effect as the hot towel applications and lotions now used to counteract the skin irritation produced by existing razors of every known type.

In the application of my invention, the requisite heat is generated within the device itself, but I do not mean to limit my invention to this particular manner of supplying heat to the blade. The invention resides in the fact that heat of very high temperature may be furnished to the blade without injury to the skin, and not in the manner in which this heat is supplied. The reason why illustrations have been selected wherein heat is generated in the handle or some other part of the razor is that a self sustaining unit is generally preferable to a device which calls for continual restoration of a dwindling heat supply.

The manner of attaining the objects outlined above will now be described with reference to the drawings in which:

Figures 1, 2 and 3, are three views of a safety razor embodying my invention, Figures 1 and 2 being, respectively, a front and a side elevation thereof, and Figure 3 a vertical section along the line 3—3 of Figure 2; Figures 4 and 5 are, respectively, a front and a side elevation of the blade supporting member of the razor shown in Figures 1—3; Figures 6 and 7 are modifications of this supporting member, both in cross section; Figures 8, 9 and 10 are top views of three variants of the guard member in the same device; Figures 11 and 12 are partial views, both in cross section, of modifications of the handle and heating arrangement of a safety razor embodying my invention; and, finally, an ordinary type of razor embodying my invention is shown in Figure 13, Figures 14 and 15 being cross sections taken, respectively, along the lines 14—14 and 15—15 of Figure 13.

In the above illustrations of a safety razor, Figures 1 to 10 inclusive, 1 is a hollow handle within which is contained a heating unit comprising a coil 2, the terminals of which 3 and 3' pass through an insulator 4 and are combined in the usual manner into a single insulated cord 5 emerging from the handle 1 at 6. The insulator 4 has a shoulder 7 which fits snugly in the handle 1 and rests against the neck 8 thereof. A metal plug 9, having a hollow chamber 10 for the heat-

ing coil 2, occupies the lower part of the handle 1 and is insulated therefrom by a sleeve 11. The sleeve 11 has a tight fit in the handle 1 and is threaded at its lower end to receive the plug 9 which has threads cooperating with the threads of the insulating sleeve 11. The plug 9 has a hole 12, threaded to receive the threaded stud 13 of the member 14 which supports the blade 15. A toothed guard 16 is interposed between the handle 1 and the blade 15 and is provided with an opening 17 for the passage of the stud 13 therethrough, and additional openings 18, 18', for the passage of the shorter studs 19, 19' on the supporting member 14, in a manner and for the purpose well known and understood in the art. The supporting member 14 may be entirely of a material of negligible heat conductivity, such as bakelite, for instance, as in Figures 4 and 5, or it may have a metal plate 20 embedded in the material of negligible heat conductivity, as in Figure 6, the studs 13, 19 and 19' being all of metal and integral with the plate 20 in this case; or, it may be all of a material of negligible heat conductivity, except the central metal stud 13 whose metal base 21 is embedded or otherwise affixed in the supporting member 14. Likewise, the guard member 16 may be all of a material of negligible heat conductivity, as in Figure 8, or it may have a metal plate 22 embedded therein, as in Figure 9, extending over all of the openings 17, 18, 18'; or, it may have a base plate 23, as in Figure 10, extending over the central opening 17 alone.

In the practice of my invention, when the supporting member 14 is as in Figure 4, i. e. all of heat insulating and insulated material, a guard of the form which is shown either in Figure 9 or in Figure 10 should be used; while the guard illustrated in Figure 8, i. e. one entirely of heat insulating and insulated material, should be combined with a supporting member either of the form shown in Figure 6 or of the form shown in Figure 7. The purpose in so selecting the types of support and guard members is to establish a thermal contact between the razor blade and the heating unit in the handle.

The cord 5 may end in a standard electric plug (not shown) for supplying current to the heating coil 2.

In Figure 11, the heating unit is in the form of a cartridge 24 placed inside the handle and comprising a suitable chemical for generating heat upon being treated in a certain manner, as, for example, lime treated with water. The insulating sleeve 11 in this case extends all the length of the handle, and a removable cap 25 is provided for the handle 1 to make the insertion and removal of the cartridge 24 possible. The cartridge 24 is placed in the chamber

10 of the metal plug 9, the chamber 10 being provided with a removable cap 26, and care being taken to leave sufficient room for a possible expansion of the chemical in the cartridge.

In Figure 12, the device differs from that shown in Figure 3 only in that the current for the heating coil 2, instead of being supplied from an external source, is furnished by a dry cell 27 contained in the handle 1.

In the case of an ordinary razor, such as is shown in Fig. 13, the blade 28, including its extension 29, has a protective covering 30 of a material of negligible heat conductivity, only the cutting edge of the blade being exposed. The heating unit, as shown, although not necessarily so disposed, is a coil 2 along the length of the razor opposite the cutting edge, current being supplied thereto through the wires in the cord 5. The connection between the razor extension 29 and the handle or frame 31 may also be heat insulated, as shown in detail in Figure 15, wherein the pin 33 is insulated from the razor extension 29 by an insulating washer 32.

Thus, it will be seen that in all cases the razor has a protective covering of negligible heat conductivity extending over all parts thereof which are apt to come in contact with the skin operated upon, except the cutting edge or edges. As stated in the preamble, the exposure of the cutting edge is without injurious effect because of the coating of lather invariably preceding the shaving operation. The present invention, therefore, permits heat of high temperature to be supplied to the blade and accomplishes what it is not possible to accomplish with razors that do not embody this invention. I may add that this accomplishment, i. e. a perfect and rapid shave which leaves the skin in a healthy and comfortable condition, may be effected with the use of my razor even when the cutting edge of the blade is somewhat dull.

I claim:

1. A razor comprising a protective covering of negligible heat conductivity over all portions thereof which are adapted to come in contact with the skin operated upon except the cutting edge or edges of the razor blade, means carried by said razor for generating heat, and means for conveying said heat to said blade.

2. A razor comprising a protective unit for all portions thereof which are adapted to come in contact with the skin operated upon except the cutting edge or edges of the razor blade, said protective unit having negligible heat conductivity throughout its exposed surface portion and a region of high heat conductivity in proximity to said blade, means carried by said razor for generating heat, and

means for conveying said heat to said region of high heat conductivity.

3. A razor comprising an externally heat insulated protective unit disposed on both sides of the razor blade and leaving only the cutting edge or edges thereof exposed, means carried by said razor for generating heat, and means for conveying said heat to said blade.

4. A razor comprising a handle, an externally heat insulated protective unit disposed on both sides of the razor blade and leaving only the cutting edge or edges thereof exposed, means carried by said handle for generating heat, means for conveying said heat to said blade, and means for thermically insulating said handle.

5. A razor comprising a handle, a protective unit for all portions of the razor blade which are adapted to come in contact with the skin operated upon except the cutting edge or edges thereof, said protective unit having negligible heat conductivity throughout its exposed surface portion, means carried within said handle for heating said blade, and means for thermically insulating said handle.

6. A razor comprising a handle, a protective unit for all portions of the razor blade which are adapted to come in contact with the skin operated upon except the cutting edge or edges thereof, said protective unit having negligible heat conductivity throughout its exposed surface portion and a region of high heat conductivity in proximity of said blade, a heating unit in said handle, and means for conveying heat from said heating unit to said region of high heat conductivity.

7. A safety razor comprising an externally heat insulated support for the razor blade, a guard having negligible heat conductivity throughout the surface portion adapted to come in contact with the skin operated upon, means carried by said razor for generating heat, and means for conveying said heat to said blade.

8. A safety razor comprising an externally heat insulated support for the razor blade, a guard having negligible heat conductivity throughout the surface portion adapted to come in contact with the skin operated upon, said support and said guard forming two elements of a protective unit, at least one of said elements having a region of high heat conductivity adapted to be in contact with said blade, means carried by said razor for generating heat, and means for conveying said heat to said region of high heat conductivity.

9. A safety razor comprising an externally heat insulated support for the razor blade, a stud on said support projecting at a right angle to its surface, a guard having negligible heat conductivity throughout the surface portion adapted to come in contact with the

skin operated upon, said guard being provided with an opening for the passage of said stud therethrough, an externally heat insulated handle, means for attaching said handle to said stud, means disposed in said handle for generating heat, and means for conveying said heat to said blade.

10. A safety razor comprising a protective unit having negligible heat conductivity throughout the surface portion adapted to come in contact with the skin operated upon and consisting of a support for the razor blade and a guard, a handle, means for attaching said handle to said support, a heating unit in said handle, and means for conveying heat from said heating unit to said blade.

11. A safety razor comprising a protective unit having negligible heat conductivity throughout the surface portion adapted to come in contact with the skin operated upon and consisting of a support element for the razor blade and a guard element, at least one of said two elements having a region of high heat conductivity adapted to be in contact with said blade, an externally heat insulated handle, means for attaching said handle to said support, a heating unit in said handle, and means for conveying heat from said heating unit to said region of high heat conductivity.

12. A safety razor comprising an externally heat insulated support for the razor blade, a guard having negligible heat conductivity throughout the surface portion adapted to come in contact with the skin operated upon and a region of high heat conductivity adapted to be in contact with said blade, a handle, means for attaching said handle, to said support, a heating unit in said handle, means for insulating said heat unit, and means for conveying heat from said heat unit to said region of high heat conductivity.

13. In a safety razor provided with means for heating the blade, the combination with an externally heat insulated support for said blade, of a guard having negligible heat conductivity in the surface portion adapted to come in contact with the skin operated upon and cooperating with said support to hold said blade in position.

14. In a safety razor provided with means for heating the blade, the combination with an externally heat insulated support for said blade, of a stud on said support, and a guard having negligible heat conductivity in the surface portion adapted to come in contact with the skin operated upon and provided with an opening for the passage of said stud therethrough.

15. In a safety razor provided with means for heating the blade, the combination with an externally heat insulated support for said blade, of a guard having negligible heat conductivity in the surface portion adapted to come in contact with the skin operated upon

- and a region of high heat conductivity adapted to be in contact with said blade, said guard cooperating with said support to hold said blade in position.
- 5 16. In a razor provided with means for heating the blade, a guard having negligible heat conductivity in the surface portion adapted to come in contact with the skin operated upon.
- 10 17. In a safety razor, a guard having negligible heat conductivity in the surface portion adapted to come in contact with the skin operated upon and a region of high heat conductivity adapted to be in contact with the blade of said razor.
- 15 18. In a safety razor, a guard of negligible heat conductivity and an exposed metal plate embedded therein adapted to be in contact with the blade of said razor.
- 20 19. In a safety razor provided with means for conveying heat to the blade, a support for said blade comprising a shell of negligible heat conductivity and a stud integral therewith and projecting therefrom at a right angle to its surface.
- 25 20. A support for the blade of a safety razor provided with means for conveying heat to said blade comprising a shell of negligible heat conductivity, a metal plate embedded in said shell, and a stud integral with said plate and projecting therefrom at a right angle to its surface.
- 30 21. In a safety razor provided with means for conveying heat to the blade, a support for said blade comprising a shell of negligible heat conductivity, a plurality of studs projecting therefrom at a right angle to its surface, and means for attaching a handle to one of said studs.
- 35 22. A razor comprising a protective unit for all portions thereof which are adapted to come in contact with the skin operated upon except the cutting edge or edges of the razor blade, said protective unit having negligible heat conductivity throughout its exposed surface portion, and means carried by said razor for heating said blade.
- 45 23. In a razor provided with means for heating the blade, a protective covering of negligible heat conductivity over all portions thereof which are adapted to come in contact with the skin operated upon except the cutting edge or edges of said blade.
- 50 24. In a razor provided with means for heating the blade, an externally heat insulated protective unit disposed on both sides of said blade and leaving only the cutting edge or edges thereof exposed.
- 55 25. In a safety razor provided with means for heating the blade, an externally heat insulated support for said blade, and a guard having negligible heat conductivity throughout the surface portion adapted to come in contact with the skin operated upon, said support and said guard forming two elements of a protective unit, at least one of said elements having a region of high heat conductivity adapted to be in contact with said blade.
- 60 26. In a safety razor provided with means for heating the blade, an externally heat insulated support for said blade, a stud on said support, and a guard having negligible heat conductivity throughout the surface portion adapted to come in contact with the skin operated upon, said guard being provided with an opening for the passage of said stud therethrough.
- 65 27. A razor comprising an externally heat insulated protective unit disposed on both sides of the razor blade and leaving only the cutting edge or edges thereof exposed, a heating unit carried by said razor, means for energizing said heating unit, and means for conveying heat from said heating unit to said blade.
- 70 28. A razor comprising an externally heat insulated protective unit disposed on both sides of the razor blade and leaving only the cutting edge or edges thereof exposed, an electrically operated heating unit carried by said razor, means for supplying electricity to said heating unit, and means for conveying heat from said heating unit to said blade.
- 75 29. A razor comprising an externally heat insulated protective unit disposed on both sides of the razor blade and leaving only the cutting edge or edges thereof exposed, an electrically operated heating unit carried by said razor, means for supplying electricity to said heating unit from an external source, and means for conveying heat from said heating unit to said blade.
- 80 30. A razor comprising a handle, an externally heat insulated protective unit disposed on both sides of the razor blade and leaving only the cutting edge or edges thereof exposed, an electrically operated heating unit carried by said razor, a dry cell in said handle for energizing said heating unit, and means for conveying heat from said heating unit to said blade.
- 85 31. A razor comprising an externally heat insulated protective unit disposed on both sides of the razor blade and leaving only the cutting edge or edges thereof exposed, a chemically operated heating unit carried by said razor, and means for conveying heat from said heating unit to said blade.
- 90 32. A razor comprising a handle, an externally heat insulated protective unit disposed on both sides of the razor blade and leaving only the cutting edge or edges thereof exposed, a cartridge in said handle containing a chemical compound adapted to generate heat, means for conveying said heat to said blade, and means for thermally insulating said handle.
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